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Chen

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(54) **DUAL AIR FLOW REBUILDABLE DRIPPING ATOMIZER WITH AN ADJUSTABLE AIR FLOW SLEEVE FOR AN ELECTRONIC CIGARETTE**

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A24F 17/00 (2006.01)
A24F 25/00 (2006.01)
A24F 47/00 (2020.01)

(52) **U.S. Cl.**
CPC *A24F 47/008* (2013.01)

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USPC 131/329, 330, 328
See application file for complete search history.

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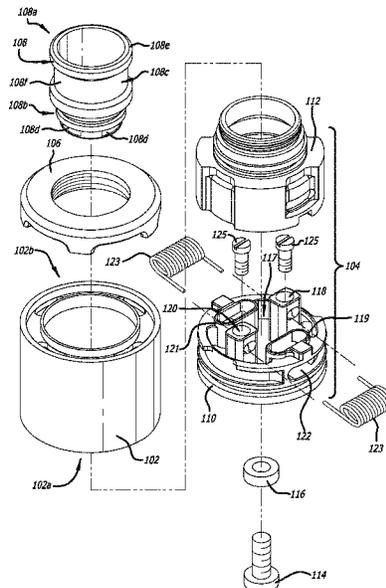
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(57) **ABSTRACT**

A dual air flow rebuildable dripping atomizer for use with electronic cigarettes which uses a sleeve lock that allows the user to adjust and direct the air flow is provided. The adjustable air flow sleeve also allows the sleeve to be locked in place preventing the e-liquid from leaking out. Rotating the adjustable air flow sleeve in a clockwise or counter-clockwise direction allows not only the direction of the air flow to be determined but how much air enters an inner air chamber of the atomizer. As a result, a user can determine, for example, the size of the vapor cloud and the intensity of the flavor. Additionally, the adjustable air flow sleeve may be adjusted to block air holes located on an inner edge surface of the adjustable air flow sleeve preventing the e-liquid from leaking.

17 Claims, 10 Drawing Sheets



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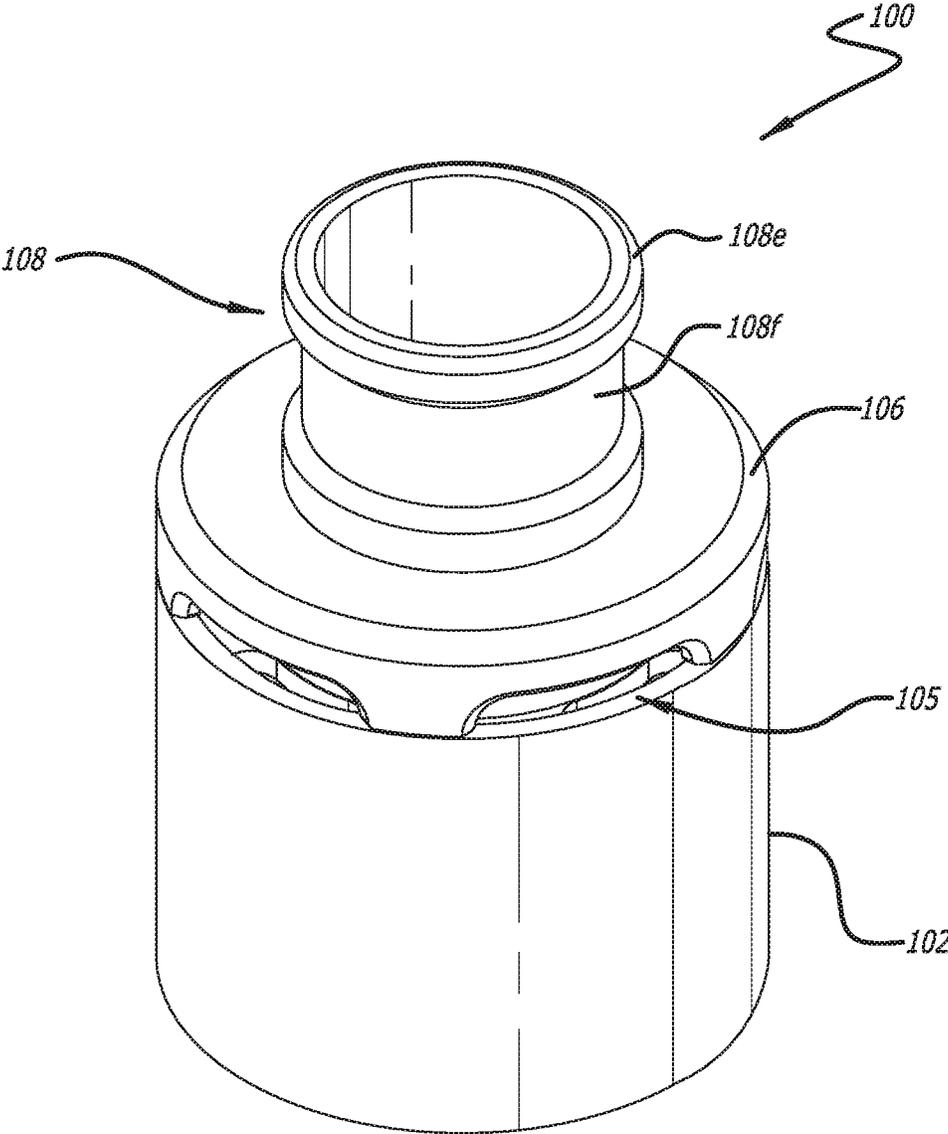


FIG. 1

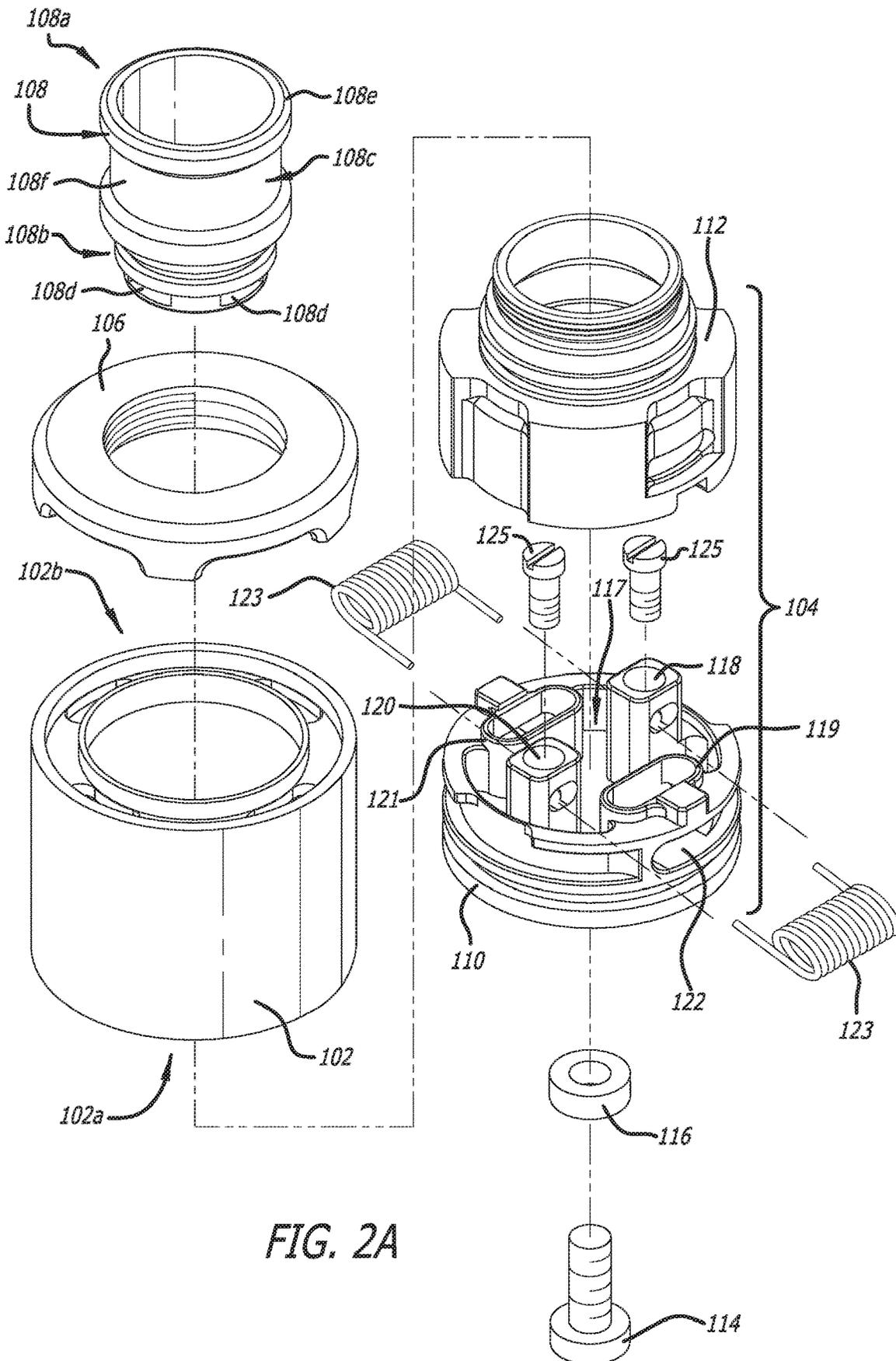


FIG. 2A

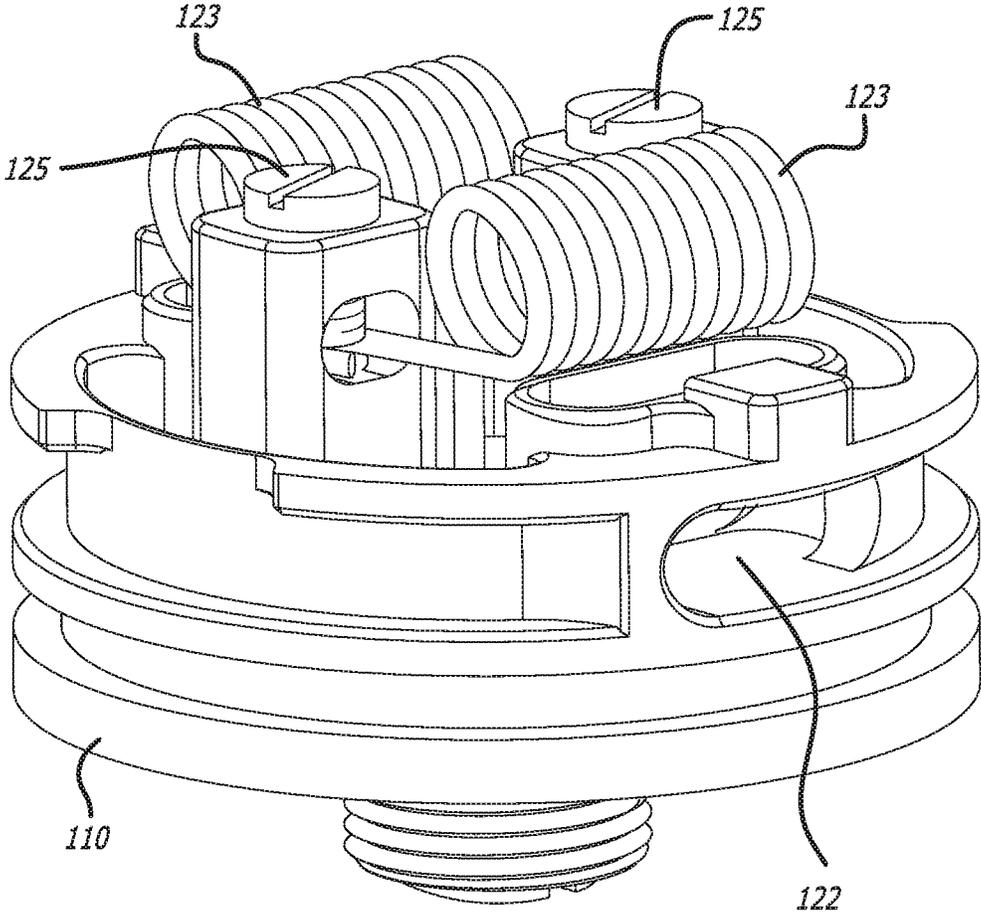


FIG. 2B

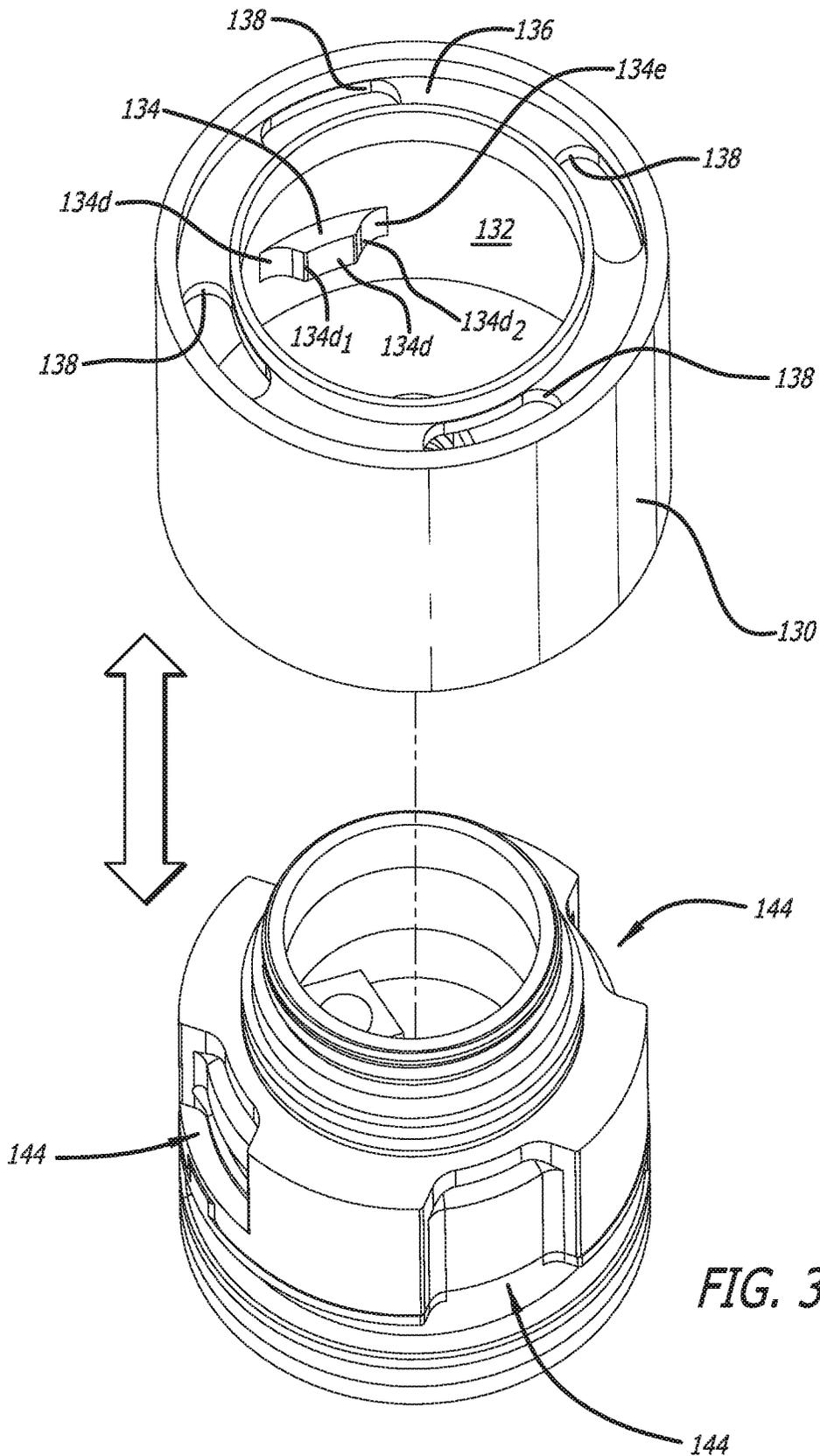


FIG. 3

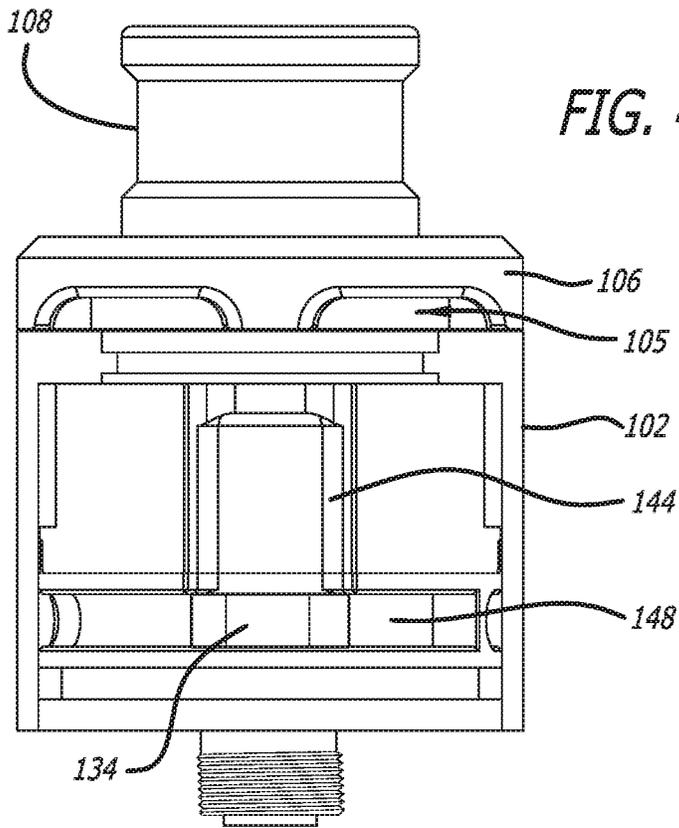


FIG. 4

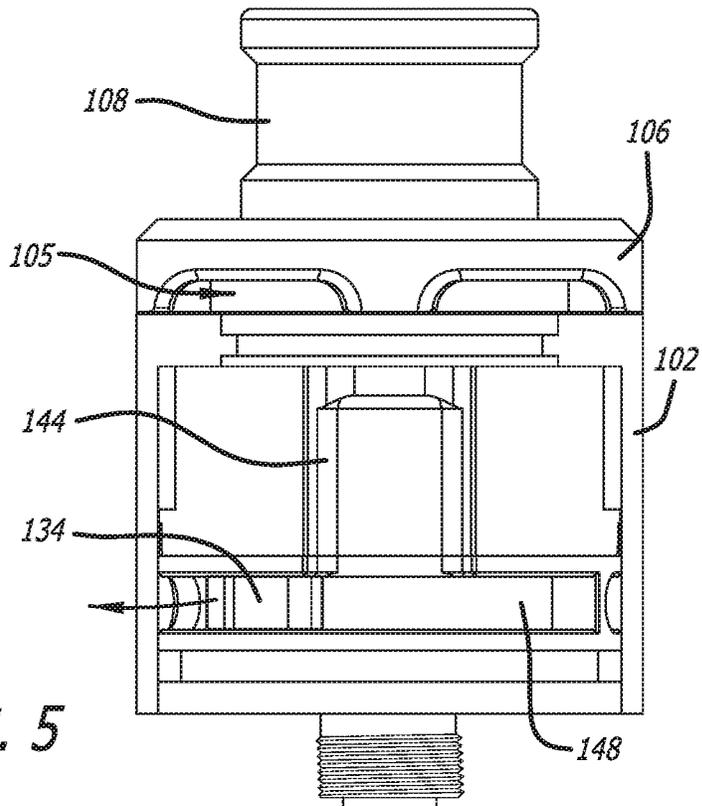


FIG. 5

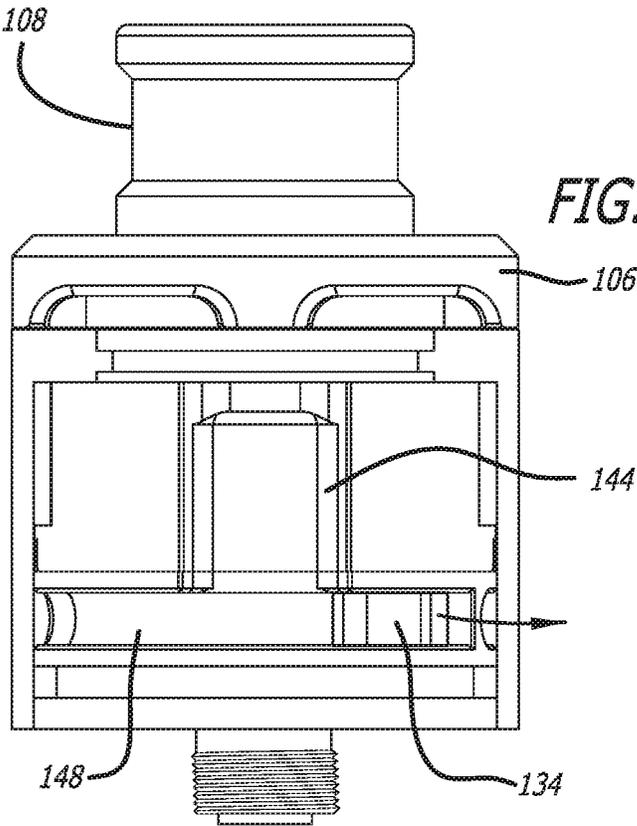


FIG. 6

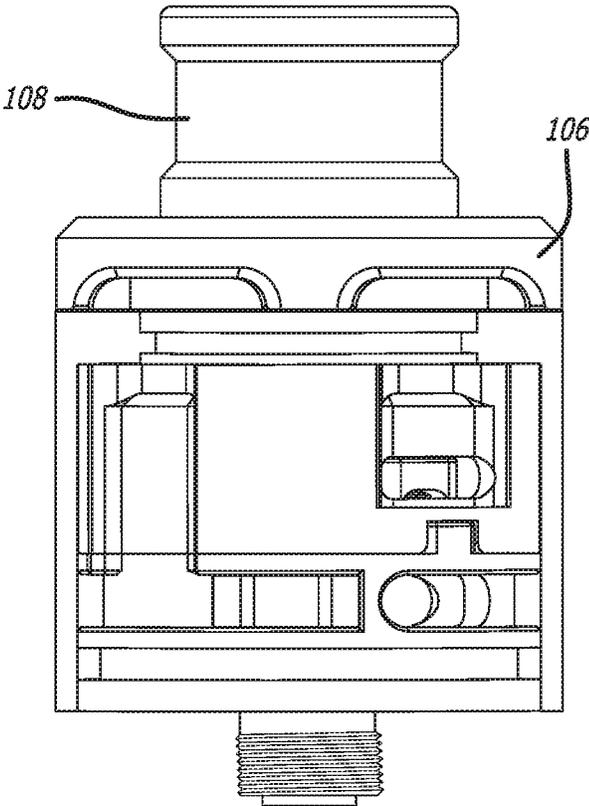


FIG. 7

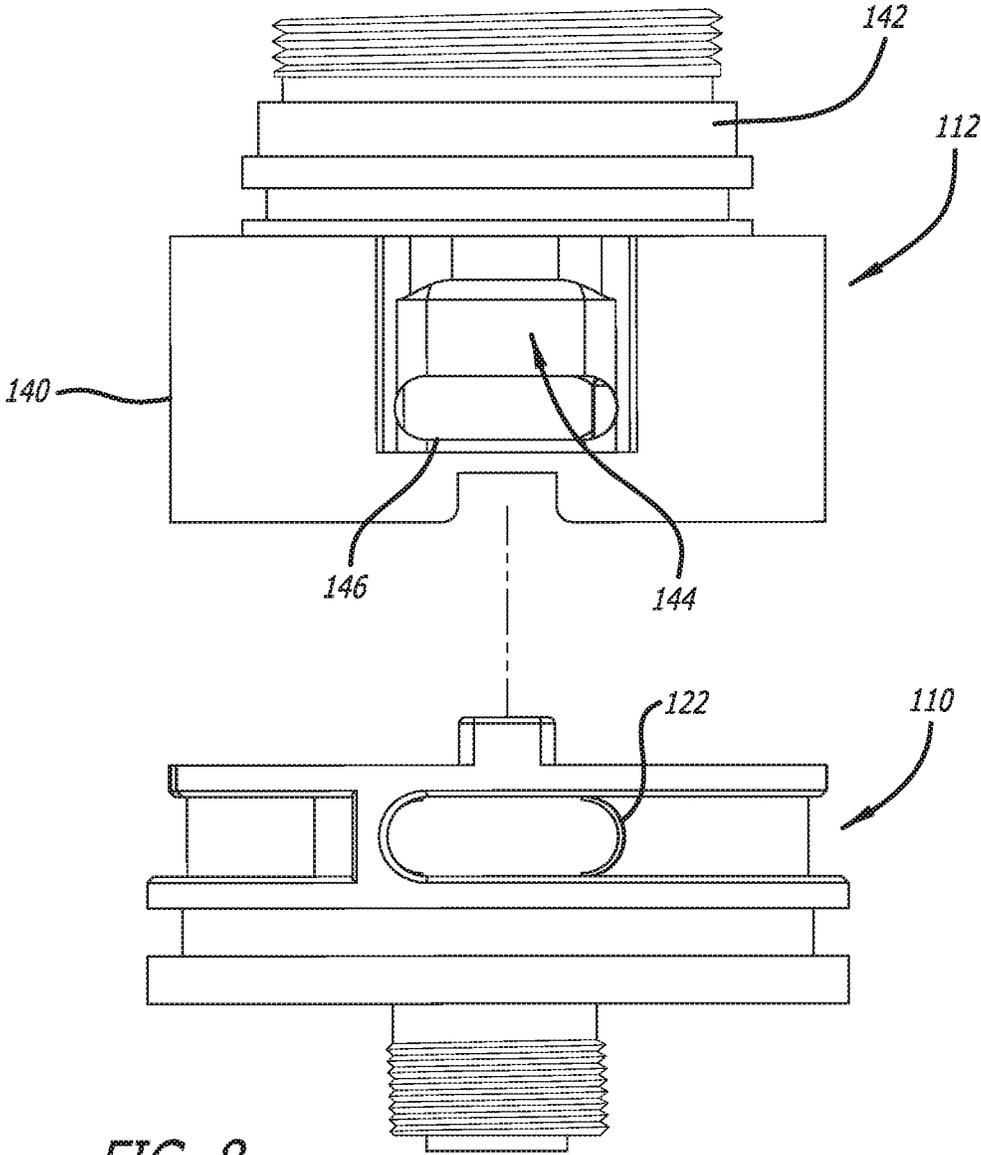


FIG. 8

FIG. 9

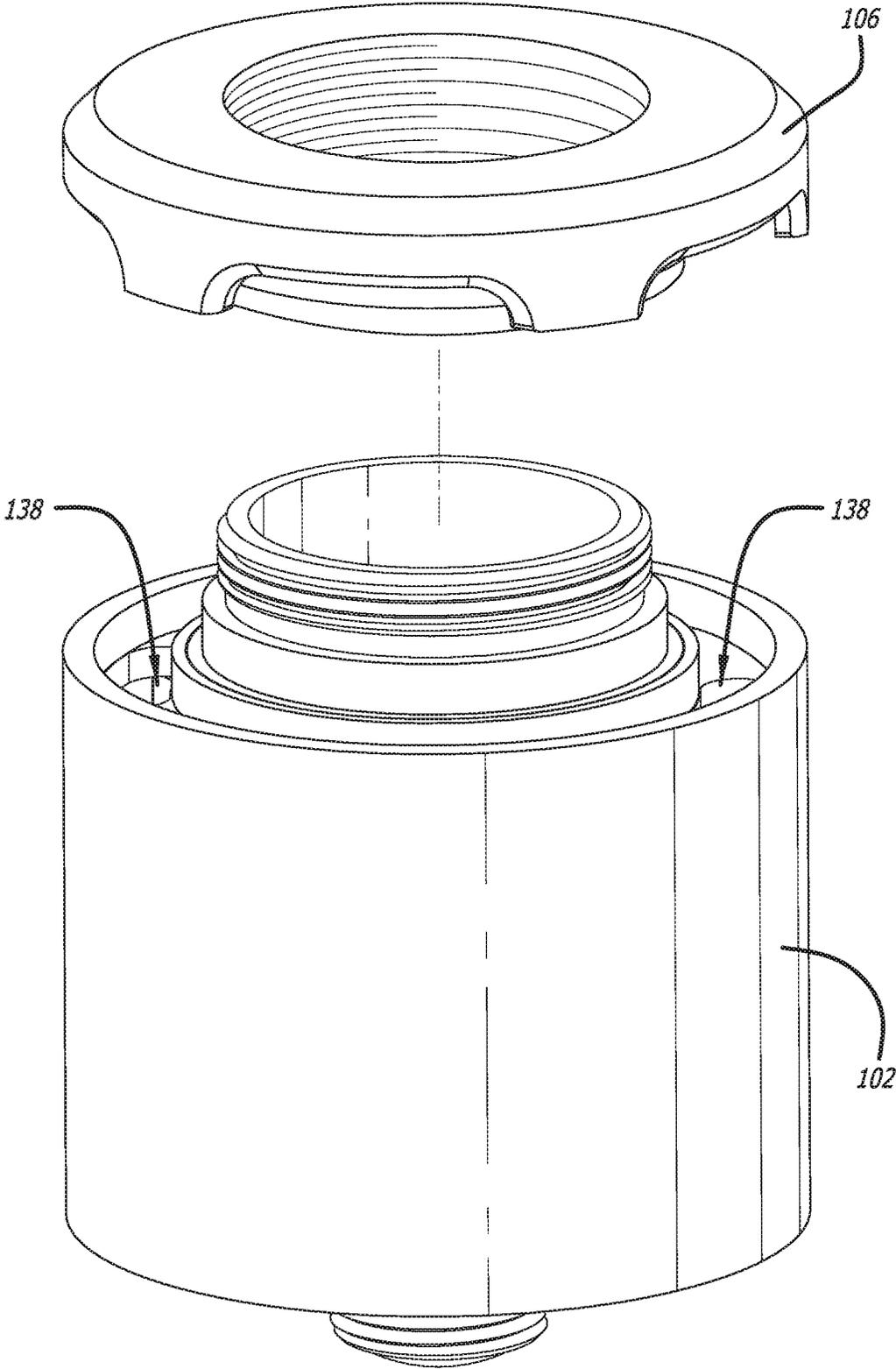
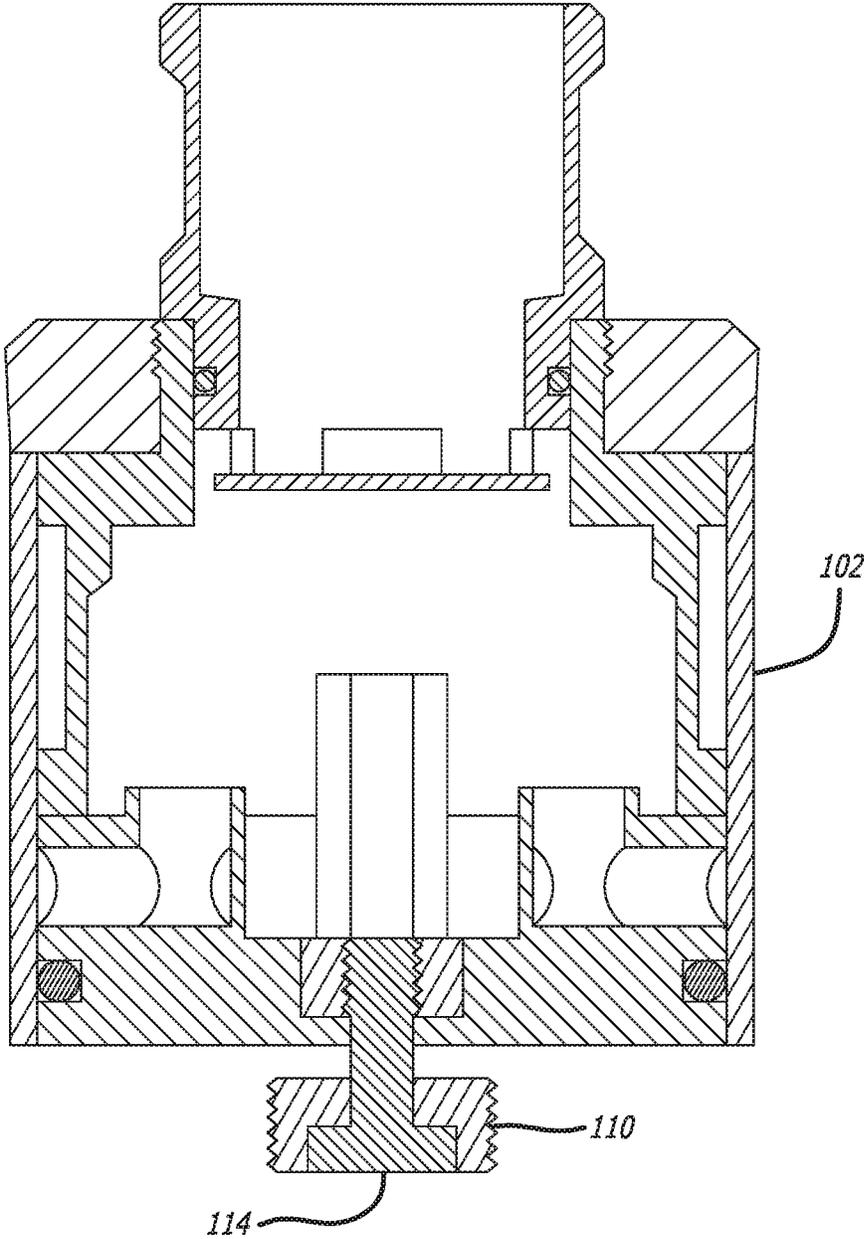
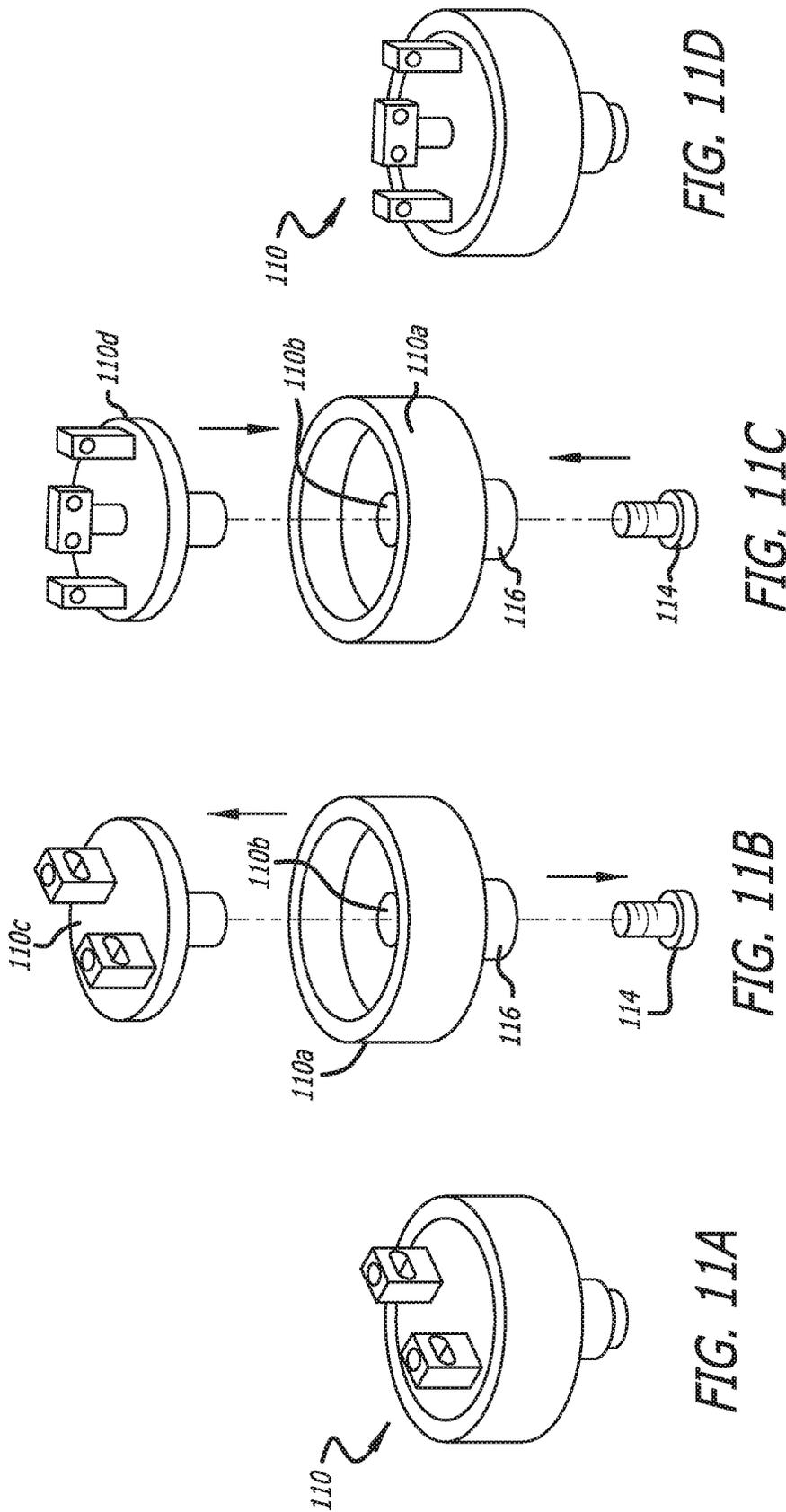


FIG. 10





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**DUAL AIR FLOW REBUILDABLE DRIPPING
ATOMIZER WITH AN ADJUSTABLE AIR
FLOW SLEEVE FOR AN ELECTRONIC
CIGARETTE**

CROSS REFERENCE TO RELATED
APPLICATIONS

This application claims priority to a provisional application, U.S. Ser. No. 62/416,489, filed Nov. 2, 2016, entitled "Rebuildable Dripping Atomizer for an Electronic Cigarette".

FIELD

The present invention relates to electronic cigarettes and in particular to a rebuildable dripping atomizer with adjustable air flow for use with an electronic cigarette.

BACKGROUND

An electronic cigarette, or e-cigarette, is a handheld, battery operated device that is designed to turn nicotine and other chemicals into a vapor which is delivered to the lungs via inhalation. The primary components of an electronic cigarette parts are a mouthpiece, a tank (or cartridge), a heating element/atomizer, and a battery. The atomizer comprises a small heating element, or coil, that vaporizes liquid solution or e-liquid and wicking material, such as cotton, that draws e-liquid onto the coil, when air flows through the atomizer. When the user activates the electronic cigarette, for example by pushing a button, activating a pressure sensor by inhaling, or any other known method in the art, the heating element in the atomizer atomizes the liquid solution creating a vapor which the user inhales. The vapor provides a flavor and feel similar to tobacco smoking.

With the increasing popularity of electronic cigarettes comes various competitions among electronic cigarette smokers, such as competitive vaping (or "cloud chasing") in which competitors try to blow the biggest, densest vapor cloud possible. Users utilize the air flow in the atomizer to draw the vapor from where it's being created and into the mouth/lungs of the user, to change the vapor cloud. When a large amount of air flow is passing through the coils, the vapor gets less dense but produces larger vapor clouds. While this allows for a bigger vapor cloud, it also reduces the flavor. Conversely, users who are more concerned with the flavor and less with the size of the vapor cloud, may desire to limit the air flow.

While there are existing atomizer on the market that allow users to adjust the air flow, these prior art atomizers utilize caps that cover the tank where the e-liquid is stored. However, these caps can be easily pulled off or loosened. When the cap is pulled off or loosened, the e-liquid can then leak out of the tank. This can be very problematic for users who carry their electronic cigarettes in their pockets, bags, purses, etc.

In view of the above, what is needed is a rebuildable dripping atomizer which uses a sleeve lock that allows the user to adjust and direct the air flow while preventing the e-liquid from leaking out of the atomizer.

SUMMARY

The following presents a simplified summary of one or more implementations in order to provide a basic understanding of some implementations. This summary is not an

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extensive overview of all contemplated implementations, and is intended to neither identify key or critical elements of all implementations nor delineate the scope of any or all implementations. Its sole purpose is to present some concepts of one or more implementations in a simplified form as a prelude to the more detailed description that is presented later.

According to one feature, a rebuildable dripping atomizer for an electronic cigarette is provided. The rebuildable dripping atomizer includes an inner air chamber, the inner air chamber, an adjustable air flow sleeve mounted over the inner air chamber a removable cap adapted to be received on the adjustable air flow sleeve; and a removable mouthpiece secured to the removable cap. The inner air chamber may include a building deck portion having one or more dynamic bottom air flow channels; and an inner sleeve portion mounted onto the building deck portion, the inner sleeve portion having at least two concave grooves extending a vertical length of the inner sleeve portion where at least one of the at least two concave grooves include a side air flow channel forming a passageway allowing air flow to be diverted. The adjustable air flow sleeve may include an outer surface; and an opposing inner surface, the inner surface having one or more protrusions integrally connected to and extending outwardly therefrom, the one or more protrusions moveable within the passageway.

According to one aspect, the removable cap include a plurality of cut out portions on a side edge forming openings in the atomizer when the removable cap is secured to the adjustable air flow sleeve.

According to another aspect, the rebuildable dripping atomizer may further include an inner edge surface extending outwardly from the inner surface, the inner edge surface having one or more inner edge surface holes configured to allow air into the inner air chamber from outside the atomizer.

According to yet another aspect, the inner edge surface has a circular configuration and the one or more inner edge surface holes are equally spaced around the inner edge surface.

According to yet another aspect, the inner sleeve portion of the inner air chamber extends outwardly from the inner edge surface.

According to yet another aspect, each of the one or more protrusions may include a top wall member extending in a first vertical plane; a bottom wall member extending in a second vertical plane, where the first vertical plane is different than the second vertical plane; an edge wall member integrally connecting the top wall member and the bottom wall member; a first side wall member extending downwardly in a concave manner from a first side end of the edge wall member to first outer edges of the top and bottom wall members; and a second side wall member extending downwardly in a concave manner from a second side end of the edge wall member to second outer edges of the top and bottom wall members.

According to yet another aspect, the adjustable air flow sleeve is rotatable in a clockwise direction locking the adjustable air flow sleeve to the building deck portion of the inner air chamber and locking the protrusions in the passageway securing the inner sleeve portion to the building deck portion.

According to yet another aspect, the adjustable air flow sleeve is rotatable in the clockwise direction 60 degrees.

According to yet another aspect, the side air flow channel on the inner sleeve portion of the inner air chamber are being

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used and dynamic bottom air flow channels on the building deck portion of the inner air chamber are sealed off.

According to yet another aspect, the adjustable air flow sleeve rotates in a counter-clockwise direction locking the adjustable air flow sleeve to the building deck portion of the inner air chamber and locking the protrusions in the passageway securing the inner sleeve portion to the building deck portion.

According to yet another aspect, the adjustable air flow sleeve is rotatable in the counter-clockwise direction 60 degrees.

According to yet another aspect, the adjustable air flow sleeve rotates independently of the inner air chamber.

According to yet another aspect, rotating the adjustable air flow sleeve around the inner sleeve portion of the inner air chamber causes the one or more inner edge surface holes on the inner edge surface of the adjustable air flow sleeve to open and close allowing and preventing air from entering the atomizer.

According to yet another aspect, the side air flow channel on the inner sleeve portion of the inner air chamber have an elongated configuration located in a vertical plane.

According to yet another aspect, the dynamic bottom air flow channels on the building deck portion of the inner air chamber have an elongated configuration located in a vertical plane.

According to yet another aspect, the mouthpiece may include an upper end portion; a lower end portion configured to be received within an opening of the removable cap, the lower end portion having a plurality of spit back openings located around a bottom side surface of the lower end portion; and a middle stop portion integrally connected between the upper end portion and the lower end portion.

According to yet another aspect, the detachable mouthpiece has a circular configuration wherein a diameter of the middle stop portion is larger than a diameter of the opening in the cap.

According to yet another aspect, the upper end portion includes an upper lip having a diameter equal to the diameter of the middle stop portion; and wherein an outer surface of the mouthpiece between the upper lip and the middle stop portion has a diameter smaller than the diameter of the upper lip and the diameter of the middle stop portion.

BRIEF DESCRIPTION OF THE DRAWINGS

The features, nature, and advantages of the present aspects may become more apparent from the detailed description set forth below when taken in conjunction with the drawings in which like reference characters identify correspondingly throughout.

FIG. 1 is a perspective view of a rebuildable dripping atomizer according to the present invention.

FIG. 2A is an exploded view of the rebuildable dripping atomizer of FIG. 1.

FIG. 2B illustrates a building deck portion of the rebuildable dripping atomizer of FIG. 1.

FIG. 3 illustrates an inner air chamber and adjustable air flow sleeve utilized in the rebuildable dripping atomizer of FIG. 1.

FIG. 4 illustrates a cross-sectional view of the atomizer of the rebuildable dripping atomizer of FIG. 1.

FIG. 5 illustrates a cross-sectional view of the atomizer of the rebuildable dripping atomizer of FIG. 1 with the adjustable air flow rotated 60 degrees clockwise.

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FIG. 6 illustrates a cross-sectional view of the atomizer of the rebuildable dripping atomizer of FIG. 1 with the adjustable air flow sleeve rotated 60 degrees counter-clockwise.

FIG. 7 illustrates a cross-sectional view of the atomizer of the rebuildable dripping atomizer of FIG. 1 with the adjustable air flow sleeve rotated into a closed position.

FIG. 8 illustrates an exploded view of the inner air chamber of the rebuildable dripping atomizer of FIG. 1.

FIG. 9 illustrates the rebuildable dripping atomizer of FIG. 1 with the cap removed from the adjustable air flow sleeve.

FIG. 10 illustrates a cross-sectional view of the rebuildable dripping atomizer of FIG. 1.

FIG. 11A illustrates a 2 post building deck.

FIG. 11B illustrates a 2 post deck separated from a base.

FIG. 11C illustrates a Y post deck separated from a base

FIG. 11D illustrates a Y post building deck.

DETAILED DESCRIPTION

The following detailed description is of the best currently contemplated modes of carrying out the invention. The description is not to be taken in a limiting sense, but is made merely for the purpose of illustrating the general principles of the invention.

A user of an e-Cig may also be referred to as a vapor and the act of "smoking" may be referred to as vaping. One method used for vaping is "dripping". When dripping, the user removes the cartridge from the atomizer and puts 3-5 drops, for example, of a favorite juice directly onto the atomizer coil or bridge yielding clean puffs full of vapor. Whenever the user wants to take another hit, more drops may be placed on the atomizer.

Overview

Embodiments of the present disclosure are directed to a dual air flow rebuildable dripping atomizer for use with electronic cigarettes which uses an adjustable air flow sleeve rotatable around an inner air chamber to adjust and divert air flow. The adjustable air flow sleeve also allows the sleeve to be locked in place preventing the e-liquid from leaking out. Rotating the adjustable air flow sleeve in a clockwise or counter-clockwise direction allows not only the direction of the air flow to be determined but how much air enters an inner air chamber of the atomizer by opening and/or closing side air flow channels and dynamical bottom air flow channels in the inner air chamber. As a result, a user can determine, for example, the size of the vapor cloud and the intensity of the flavor. Additionally, the adjustable air flow sleeve may be adjusted to block air holes located on an inner edge surface of the adjustable air flow sleeve preventing the e-liquid from leaking.

FIG. 1 is a perspective view of a rebuildable dripping atomizer according to the present invention. FIG. 2A is an exploded view of the rebuildable dripping atomizer of FIG. 1. FIG. 2B illustrates a building deck portion of the rebuildable dripping atomizer of FIG. 1. FIG. 3 illustrates an inner air chamber and adjustable air flow sleeve utilized in the rebuildable dripping atomizer of FIG. 1. FIG. 4 illustrates a cross-sectional view of the atomizer of the rebuildable dripping atomizer of FIG. 1. FIG. 5 illustrates a cross-sectional view of the atomizer of the rebuildable dripping atomizer of FIG. 1 with the adjustable air flow rotated 60 degrees clockwise. FIG. 6 illustrates a cross-sectional view of the atomizer of the rebuildable dripping atomizer of FIG. 1 with the adjustable air flow sleeve rotated 60 degrees counter-clockwise. FIG. 7 illustrates a cross-sectional view of the atomizer of the rebuildable dripping atomizer of FIG.

1 with the adjustable air flow sleeve rotated into a closed position. FIG. 8 illustrates an exploded view of the inner air chamber of the rebuildable dripping atomizer of FIG. 1. FIG. 9 illustrates the rebuildable dripping atomizer of FIG. 1 with the cap removed from the adjustable air flow sleeve. FIG. 10 illustrates a cross-sectional view of the rebuildable dripping atomizer of FIG. 1. FIGS. 11A-11D illustrate an interchangeable building deck. The following discussion refers interchangeably to FIGS. 1-11D.

As shown, the rebuildable dripping atomizer 100 may include an adjustable air flow sleeve 102 having a first end 102a and an opposing second end 102b. An inner air chamber 104 may be mounted within the first end 102a of the adjustable air flow sleeve 102 and a removable top cap 106 may be detachably mounted onto the second end 102b of the adjustable air flow sleeve 102 for securing the adjustable air flow sleeve 102 to the inner air chamber 104. The removable top cap 106 may have a generally circular configuration and include a plurality of cut out portions 105 located around a side edge portion of the rotatable top cap 106. When the top cap 106 is secured to the second end 102b of the adjustable air flow sleeve 102, the plurality of cut out portions 105 form openings allowing air to pass through and into the cap 106. A detachable mouthpiece 108 may be removably mounted to the removable top cap 106. The user can easily add e-liquid to the atomizer by removing the mouthpiece 108

According to one aspect, the detachable mouthpiece 108 has an upper end portion 108a and a lower end portion 108b where the lower end portion 108b is adapted to be received within an opening of the removable cap 106. As shown in FIG. 2A, the lower end portion 108b is separated from the upper end portion 108a by a middle stop portion 108c. The detachable mouthpiece 108 has a generally circular configuration and the diameter of the middle stop portion 108c is larger than the diameter of the opening in the cap 106 so that when the mouthpiece 108 is inserted into the opening in the cap 106, the middle stop portion 108c rests on top of the cap 106 with the upper end portion 108a extending outwardly from the cap 106 and configured for a user to place his or her lips around and inhale. When the user places his or her lips around the mouthpiece 108, the middle stop portion 108c resting on top of the cap prevents the lips of the user from touching the top of the cap 106 which is generally made from stainless steel which gets hot during use.

One of the common problems users of electronic cigarettes have is spit back of the e-liquid, i.e. the e-liquid spits out from the e-cigarette into the mouth of a user. As the e-liquid is heated inside the electronic cigarette, the e-liquid is hot and may burn the lips and/or mouth of the user. To prevent spit back, the mouthpiece 108 of the present invention includes a plurality of spit back openings 108d located around a bottom side surface of the lower end portion 108b. According to one aspect, the plurality of spit back openings 108d may be equally spaced around the bottom side surface. When e-liquid flows or spits out of the atomizer it enters the plurality of spit back openings 108d and remains at the bottom of the mouthpiece 108 and/or flows back into the atomizer away from the lips and/or mouth of the user.

According to one aspect, a top edge of the upper end portion 108a has an upper lip 108e which has a circular configuration and has a diameter equal to the diameter of the middle stop portion 180c. As shown in FIG. 2A, the outer surface 108f of the mouthpiece 108 between the upper lip 108e and the middle stop portion 108c has a smaller diameter allowing the lips and/or mouth of the user to easily grasp the mouthpiece 108.

The inner air chamber 104 may comprise a building deck portion 110 and an inner sleeve portion 112 (See FIGS. 2A, 2B and 8), where the inner sleeve portion 112 may be placed onto the building deck portion 110. As the atomizer is rebuildable and the components (i.e. the adjustable air flow sleeve 102, the inner air chamber 104, the cap 106 and the mouthpiece 108) can be separated, the user may change out the building deck as desired. The building deck portion 110 of the inner air chamber 104 may include the building deck of the atomizer.

According to one aspect, the user may change the building deck in the atomizer. As shown in FIGS. 11A, 11B, 11C and 11D, the building deck portion 110 of the inner air chamber 104 may include a base 110a adapted to receive a building deck. The building deck may be secured to the base 110a by pin 114 inserted through an opening 110b in the base 110a and a washer 116 may be utilized between the pin 114 and the base 110a. This allows user, for example, to swap out a 2 post deck 110c (see FIG. 11B) for a Y post deck 110d (see FIG. 11C) FIG. 11A illustrates a 2 post building deck while FIG. 11D illustrates a Y post building deck.

According to one example with a 2 post deck, the building deck 117 may include vertically extending posts 118, 120 configured for attaching coils 123 (See FIG. 2B). The coils 123 are secured to the extending posts 118, 120 by screws 125. When attaching the coils 123 to the ending posts, the coils extend above air flow holes 119, 121 directing air directly onto the coils. When air flows out of the air flows holes 119, 121 onto heated coils 123 the e-liquid in the inner air chamber 104 vaporizes and this vapor is inhaled by the user. As the air flows directly onto the coils 123 the flavor of the vapor is intensified. Also included on the building deck portion 110 are a pair of opposing dynamic bottom air flow channels 122. The dynamic bottom air flow channels 122 allow air to enter the inner air chamber 104 from the side.

The inner sleeve portion 112, mounted to the building deck portion 110, may have a generally circular configuration. The inner sleeve portion 112 may be comprised of a base 140 and a top 142 integrally connected to the base 140. When the inner air chamber 104 is mounted within the adjustable air flow sleeve 102, the top 142 of the inner air chamber 104 extends out from an inner edge surface 136 of the adjustable air flow sleeve 102 and is configured to receive the mouthpiece 108, as described in more detail below. The base 140 of the inner sleeve portion 112 may include one or more concave grooves 144 equally located around the outer surface of the inner sleeve portion 112 and extending the vertical length of the base 140. As shown in FIGS. 5, 6 and 8, alternating concave grooves 144 may include a side air flow channel 146 which may create a lock track 148 or passageway allowing air to flow and be directed into the atomizer, as described in more detail below.

The air flow entering the inner air chamber 104 may be controlled by the user with the adjustable air flow sleeve 102 which is mounted over the inner air chamber 104. As shown, the adjustable air flow sleeve 102 may be generally cylindrical in shape and have an outer surface 130 and an inner surface 132. Both the outer and inner surfaces 130, 132 may be smooth with the inner surface 132 having one or more protrusions or lock tabs 134 integrally connected to and extending perpendicularly outward from inner surface 130. The lock tabs 134 may extend in a horizontal plane and have a generally elongated shape comprising a top wall member 134a and an opposing bottom wall member 134b (not shown) integrally connected by an edge wall member 134c. A first side wall member 134d may extend downwardly in a

concave manner from a first side end **134c₁** of the edge wall member **134c** to first outer edges of the top and bottom wall members **134a**, **134b**. A second side wall member **134e** may extend downwardly in a concave manner from a second side end **134c₂** of the edge wall member **134** to second outer edges of the top and bottom wall members **134a**, **134b**. As described in more detail below, the lock tabs **134** may be configured to move within a lock track **148**.

When the adjustable air flow sleeve **102** is mounted over the inner air chamber **104**, the lock tabs **134** are aligned with the concave grooves **144** of the inner sleeve portion **112** having the side air flow channels **146** so that the lock tabs **134** may be received within the side air flow channels **146**. The lock tabs **134** may move vertically within the side air flow channels **146** forming the lock track **148** or passageway. Rotating or turning the adjustable air flow sleeve **102** allows the air flow to be directed into the atomizer, as described in more detail below.

The adjustable air flow sleeve **102** may further include an inner edge surface **136** located inside the adjustable air flow sleeve **102** below the second end **102b**. The inner edge surface **136** may include one or more holes **138** located around the inner edge surface **136**. According to one aspect, the inner edge surface **136** has a circular configuration. Although four (4) air holes **138** are shown equally spaced around the inner edge surface **136** in FIG. 3, this is by way of example only. The inner edge surface **136** may include less than four (4) air holes or more than four (4) air holes.

The pair of opposing dynamic bottom air flow channels **122** on the building deck portion **110** allow the air to be diverted onto the building deck from the side of the adjustable air flow sleeve **102**. Once the adjustable air flow sleeve **102** is placed over the inner air chamber **104**, air may only travel on the lock track **148** (or passageway) which allows the air to be diverted into the inner air chamber **104** and onto the coils **123** of the building deck allowing the user to obtain the best possible flavor when vaping. If air is not being diverted directly to the coils **123**, the air provides no function and when a user is vaping without the diverting of the air, the user merely sucks a large amount of air instead of the vapor.

The adjustable air flow sleeve **102** may be adjusted in a clockwise or counter-clockwise direction providing for an adjustable dual intake option for the user. By rotating the adjust air flow sleeve in either the clockwise or counter-clockwise direction, the user can force the air flow in a particular direction diverting the air flow such the air flows into the inner air chamber just via the side air flow channels **146**, the dynamic bottom air flow channels **122** or both the side air flow channels **146** and the dynamic bottom air flow channels **122**. In other words, the adjustable air flow sleeve **102** creates the a lock track **148** or passageway allowing air to flow and be directed into the atomizer As the air entering the inner air chamber **104** comes from the lock track **148** and this air does not mix with air outside the atomizer. Alternatively, the user can turn or rotate the adjustable air flow sleeve **102** such that air is prevented from entering the atomizer.

According to one aspect, when the cap **106** is secured to the adjustable air flow sleeve **102** and the adjustable air flow sleeve **102** is not rotated, the air enters the building deck of the inner air chamber **104** from the side air flow channels **146** and from the dynamic airflow channels **122**.

According to one aspect, turning the adjustable air flow sleeve **102** clockwise 60 degrees causes the adjustable air flow sleeve **102** to lock with the building deck portion **110** of the inner air chamber **104**. As a result of rotating the

adjustable air flow sleeve **102** in the clockwise direction, the lock tabs **134** on the inner surface of the adjustable air flow sleeve **102** are secured within the lock track **148** securing the inner sleeve portion **112** to the building deck portion **110**. When in this position, only the side air flow channels **146** on the inner sleeve portion of the inner air chamber **104** are being used to divert air flow into the inner air chamber **104** and the dynamic bottom air flow channels **122** are sealed off. (See FIG. 5)

According to one aspect, turning the adjustable air flow sleeve **104** counter-clockwise by 60 degrees also causes the adjustable air flow sleeve **102** to lock with the building deck portion **110** of the inner air chamber **104**. As a result of rotating the adjustable air flow sleeve **102** in the counter-clockwise direction, the lock tabs **134** on the inner surface of the adjustable air flow sleeve **102** are secured within the lock track **148** securing the inner sleeve portion **112** to the building deck portion **110**. When in this position, all air flow is sealed off. (See FIG. 6) Once the air flow is sealed off, the user may continue twisting the adjustable air flow sleeve **102** (see FIG. 7) while pulling the adjustable air flow sleeve **102** upwards removing the adjustable air flow sleeve **102** and separating the building deck portion **110** and an inner sleeve portion **112**.

In other words, when the cap **106** is secured to the adjustable air flow sleeve **102** and the adjustable air flow sleeve **102** is not rotated, the air gets into the building deck from the side air flow channels **146** and from the dynamic airflow channels **122**. Turning the adjustable air flow sleeve **102** clockwise about 60 degrees causes the adjustable air flow sleeve to lock onto the atomizer and the lock tabs **134** to close or block up to approximately 90% of the dynamic bottom air flow channels **122** causing the atomizer to only receive air via the side air flow channels **146**.

According to one aspect, the adjustable air flow sleeve **102** not only locks the inner air chamber **104** but allows the user to adjust the air flow by turning the adjustable air flow sleeve clockwise or counter-clockwise +/-60 degrees in either direction. When the adjustable air flow sleeve **102** is locked onto the inner air chamber **104** by the lock tabs **134**, the inner air chamber **104** will not move. However, rotating the adjustable air flow sleeve **102** allows for the air intake holes **138** on the inner edge surface **136** of the adjustable air flow sleeve **102** to open and close which either allows or prevents air from entering the inner air chamber **104**. The cap **106** includes a plurality of side openings allowing air to enter the top of the atomizer, but whether the air is able to enter the inner air chamber **104** depends on whether the air intake holes are open or closed. Prior art atomizers on the market just allow a sleeve of an atomizer to be turned to adjust air flow by rotating a ring on the bottom of the atomizer. As the ring is very small and little space is available for the user to grab onto the ring making it inconvenient.

The rebuildable dripping atomizer with adjustable air flow for use with an electronic cigarette of the present invention allows the advanced user to customize the atomizer. When customizing the user first tightens the rebuildable dripping atomizer onto the energy source device. After tightening the atomizer, the user then turn and pulls the adjustable air flow sleeve 60 degrees counter-clockwise. Once the lock tabs on the inner surface of the adjustable air flow sleeve are positioned vertically with the lock path, the adjustable air flow sleeve may then be easily pull upwardly. Once the adjustable air flow sleeve has been removed, the user may then build the coils on the building deck portion of the inner air chamber and then place the inner sleeve portion of the

inner air chamber onto the building deck portion or the inner air chamber in the same direction. When in this position, both the side air flow channels and the dynamic bottom air flow channels are being utilized to gain air intake. The user may then screw on the cap which causes the lock tabs to secure the position of the inner sleeve.

One or more of the components and functions illustrated in the may be rearranged and/or combined into a single component or embodied in several components without departing from the invention. Additional elements or components may also be added without departing from the invention.

While certain exemplary embodiments have been described and shown in the accompanying drawings, it is to be understood that such embodiments are merely illustrative of and not restrictive on the broad invention, and that this invention is not be limited to the specific constructions and arrangements shown and described, since various other modifications may occur to those ordinarily skilled in the art.

What is claimed is:

1. A rebuildable dripping atomizer for an electronic cigarette, comprising:

an inner air chamber, the inner air chamber comprising:
a building deck portion having one or more dynamic bottom air flow channels; and

an inner sleeve portion mounted onto the building deck portion, the inner sleeve portion having at least two concave grooves extending a vertical length of the inner sleeve portion where at least one of the at least two concave grooves include a side air flow channel forming a passageway allowing air flow to be diverted;

an adjustable air flow sleeve mounted over the inner air chamber, the adjustable air flow sleeve comprising:

an outer surface; and

an opposing inner surface, the inner surface having one or more protrusions integrally connected to and extending outwardly therefrom, the one or more protrusions moveable within the passageway; and wherein the adjustable air flow sleeve locks the inner air chamber and allows a user to adjust the air flow by turning the adjustable air flow sleeve clockwise or counter-clockwise for adjustable the air flow;

a removable cap adapted to be received on the adjustable air flow sleeve; and

a removable mouthpiece secured to the removable cap.

2. The rebuildable dripping atomizer of claim 1, wherein the removable cap include a plurality of cut out portions on a side edge forming openings in the atomizer when the removable cap is secured to the adjustable air flow sleeve.

3. The rebuildable dripping atomizer of claim 1, further including an inner edge surface extending outwardly from the inner surface, the inner edge surface having one or more inner edge surface holes configured to allow air into the inner air chamber from outside the atomizer.

4. The rebuildable dripping atomizer of claim 1, wherein the inner edge surface has a circular configuration and the one or more inner edge surface holes are equally spaced around the inner edge surface.

5. The rebuildable dripping atomizer of claim 1, wherein the inner sleeve portion of the inner air chamber extends outwardly from the inner edge surface.

6. The rebuildable dripping atomizer of claim 1, where each of the one or more protrusions comprises:

a top wall member extending in a first vertical plane;

a bottom wall member extending in a second vertical plane, where the first vertical plane is different than the second vertical plane;

an edge wall member integrally connecting the top wall member and the bottom wall member;

a first side wall member extending downwardly in a concave manner from a first side end of the edge wall member to first outer edges of the top and bottom wall members; and

a second side wall member extending downwardly in a concave manner from a second side end of the edge wall member to second outer edges of the top and bottom wall members.

7. The rebuildable dripping atomizer of claim 1, where the adjustable air flow sleeve is rotatable in a clockwise direction locking the adjustable air flow sleeve to the building deck portion of the inner air chamber and locking the protrusions in the passageway securing the inner sleeve portion to the building deck portion.

8. The rebuildable dripping atomizer of claim 7, wherein the adjustable air flow sleeve is rotatable in the clockwise direction 60 degrees.

9. The rebuildable dripping atomizer of claim 1, wherein the adjustable air flow sleeve rotates in a counter-clockwise direction locking the adjustable air flow sleeve to the building deck portion of the inner air chamber and locking the protrusions in the passageway securing the inner sleeve portion to the building deck portion.

10. The rebuildable dripping atomizer of claim 7, wherein the adjustable air flow sleeve is rotatable in the counter-clockwise direction 60 degrees.

11. The rebuildable dripping atomizer of claim 1, wherein the adjustable air flow sleeve rotates independently of the inner air chamber.

12. The rebuildable dripping atomizer of claim 1, wherein rotating the adjustable air flow sleeve around the inner sleeve portion of the inner air chamber causes the one or more inner edge surface holes on the inner edge surface of the adjustable air flow sleeve to open and close allowing and preventing air from entering the atomizer.

13. The rebuildable dripping atomizer of claim 1, wherein the side air flow channel on the inner sleeve portion of the inner air chamber have an elongated configuration located in a vertical plane.

14. The rebuildable dripping atomizer of claim 1, wherein the dynamic bottom air flow channels on the building deck portion of the inner air chamber have an elongated configuration located in a vertical plane.

15. The rebuildable dripping atomizer of claim 1, wherein the mouthpiece comprises:

an upper end portion;

a lower end portion configured to be received within an opening of the removable cap, the lower end portion having a plurality of spit back openings located around a bottom side surface of the lower end portion; and

a middle stop portion integrally connected between the upper end portion and the lower end portion.

16. The rebuildable dripping atomizer of claim 15, wherein the detachable mouthpiece has a circular configuration wherein a diameter of the middle stop portion is larger than a diameter of the opening in the cap.

17. The rebuildable dripping atomizer of claim 16, wherein the upper end portion includes an upper lip having a diameter equal to the diameter of the middle stop portion; and wherein an outer surface of the mouthpiece between the

upper lip and the middle stop portion has a diameter smaller than the diameter of the upper lip and the diameter of the middle stop portion.

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